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Tessier

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(54) **SLIDEWAY FOR A MOTOR VEHICLE DOOR AND METHOD FOR FITTING IT PARTICULARLY BY DIFFERENTIAL BENDING**

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(73) **Assignee:** **Hutchinson**, Paris (FR)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(57) **ABSTRACT**

A method is provided for fitting a slideway, particularly a reinforced slideway, to a door of a motor vehicle exhibiting a doorframe, as well as a fixed glass and a moving glass which are separated by a fixed post. The method involves:

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(30) **Foreign Application Priority Data**

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(51) **Int. Cl.⁷** **E05D 15/16**

(52) **U.S. Cl.** **49/440; 49/489.1**

(58) **Field of Search** 49/440, 489.1, 49/490.1, 502, 441; 296/146.2, 146.5

longitudinally separating the slideway, over part of its length, into an outer portion (3) which exhibits at least an outer wall region (12), and an inner portion (2) which exhibits at least a mounting region (10) and a sealing lip (25) borne by a common wall (21), so that the slideway exhibits an unseparated region in which it consists of a main portion (1) and, from a point (100) of separation onward, a separated region in which the main portion is split along a longitudinal cutting line to form the inner portion (2) and the outer portion (3);

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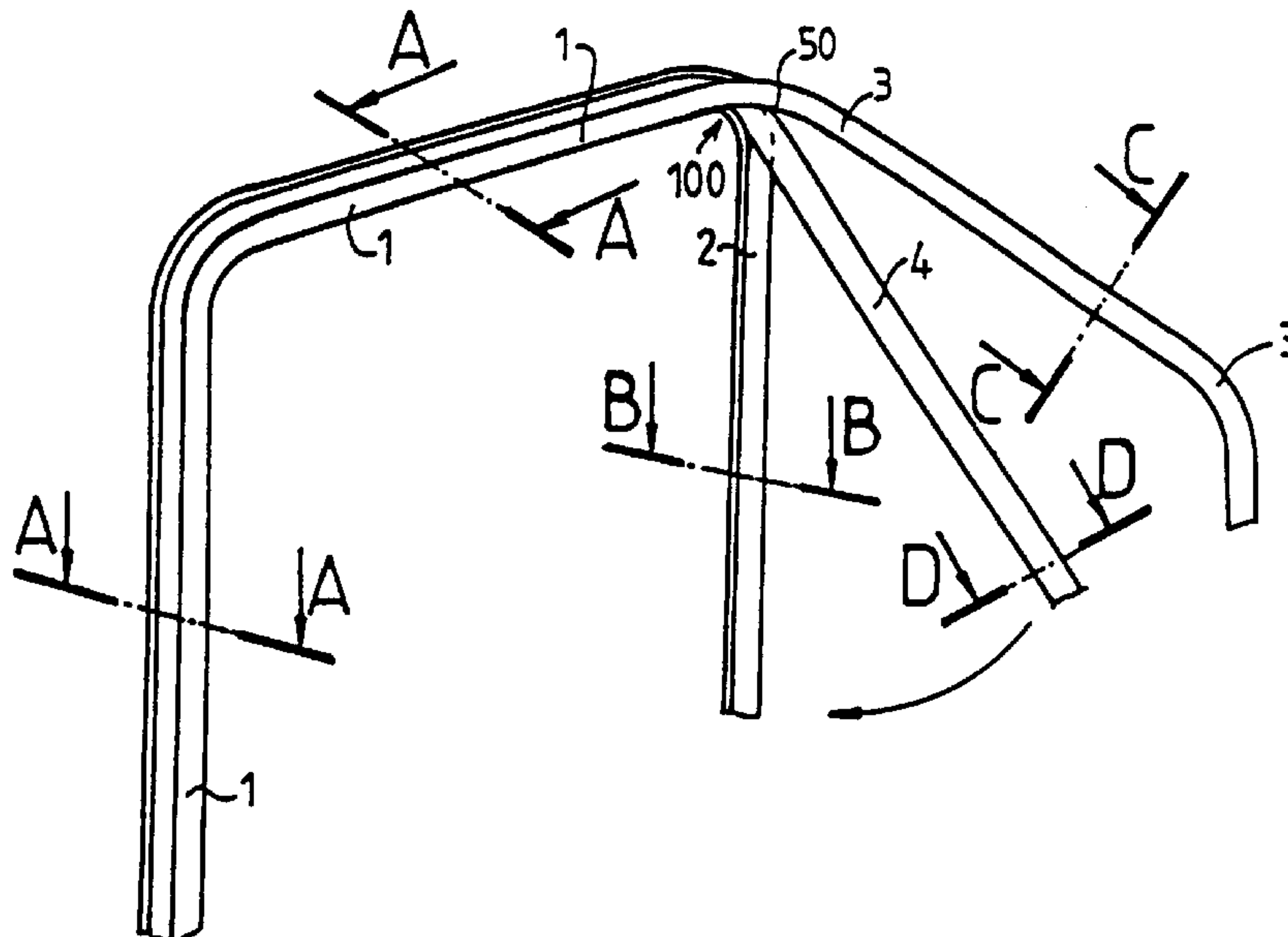
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mounting the main portion (1) on the doorframe (75, 76) up to the point where the point (100) of separation comes into line with the post (40);

mounting the outer portion (3) and the inner portion (2) on the doorframe (77) beyond said point (100) of separation, and the inner portion (2) along the post (40), respectively.

13 Claims, 3 Drawing Sheets



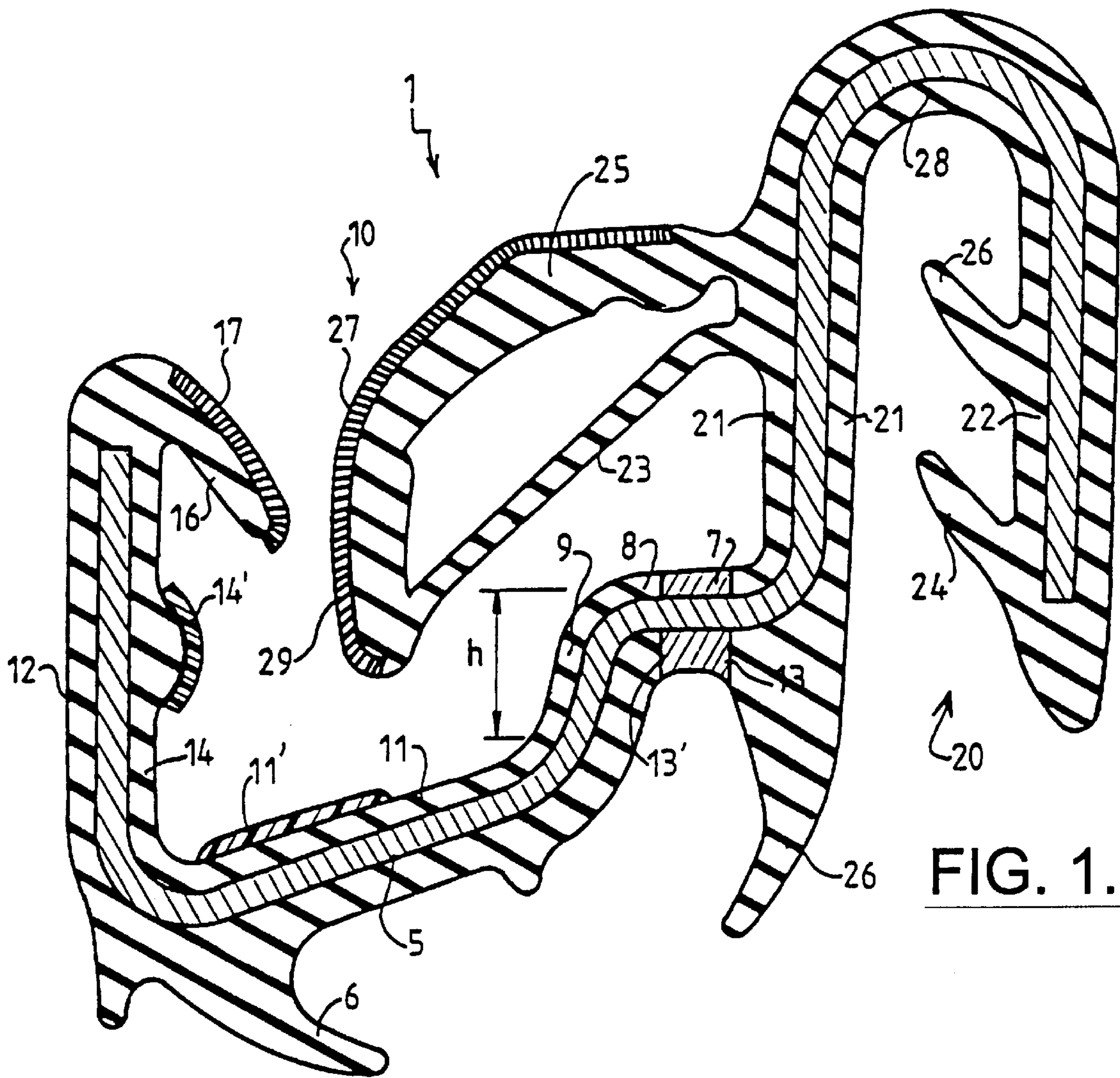


FIG. 1.

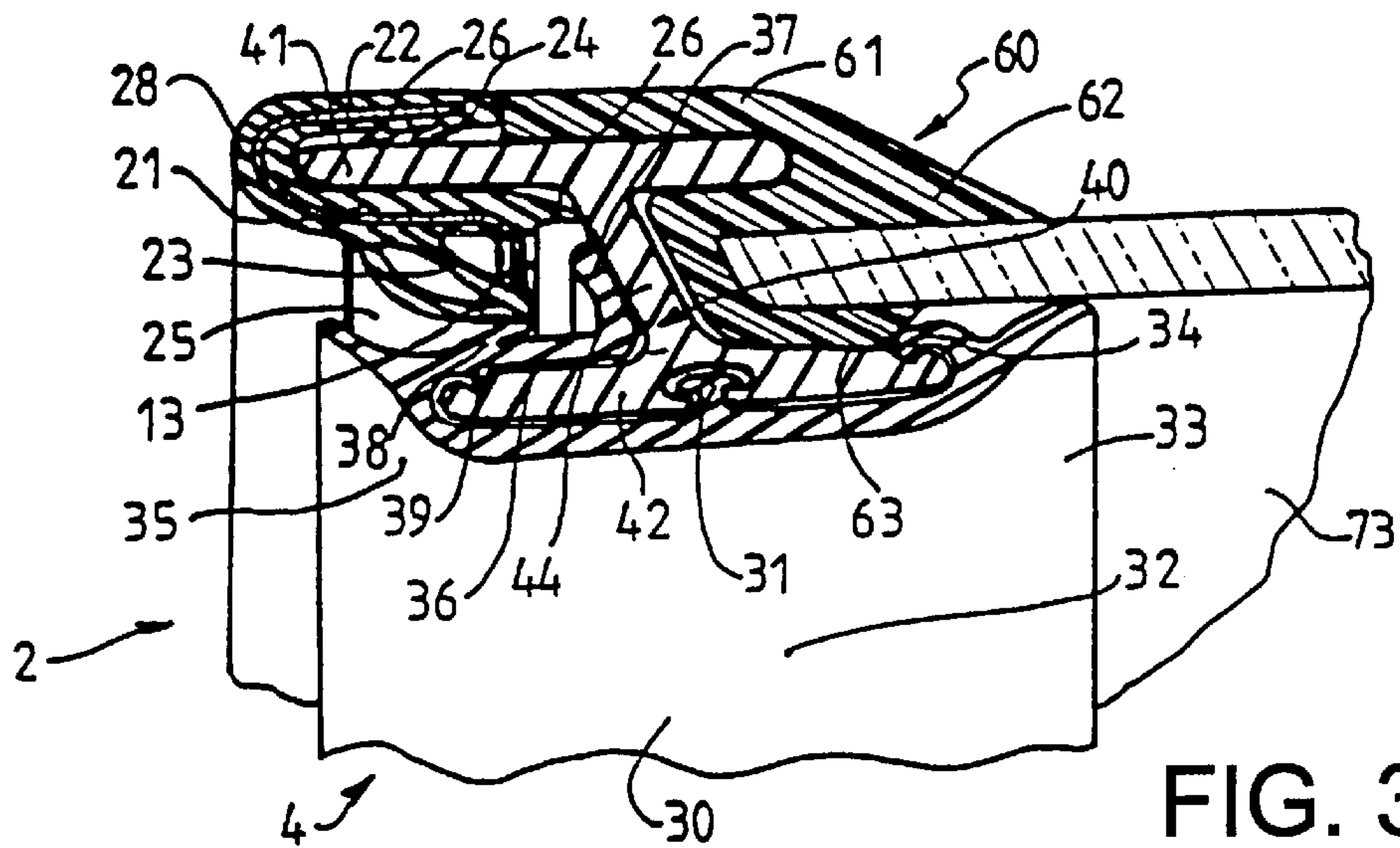


FIG. 3.

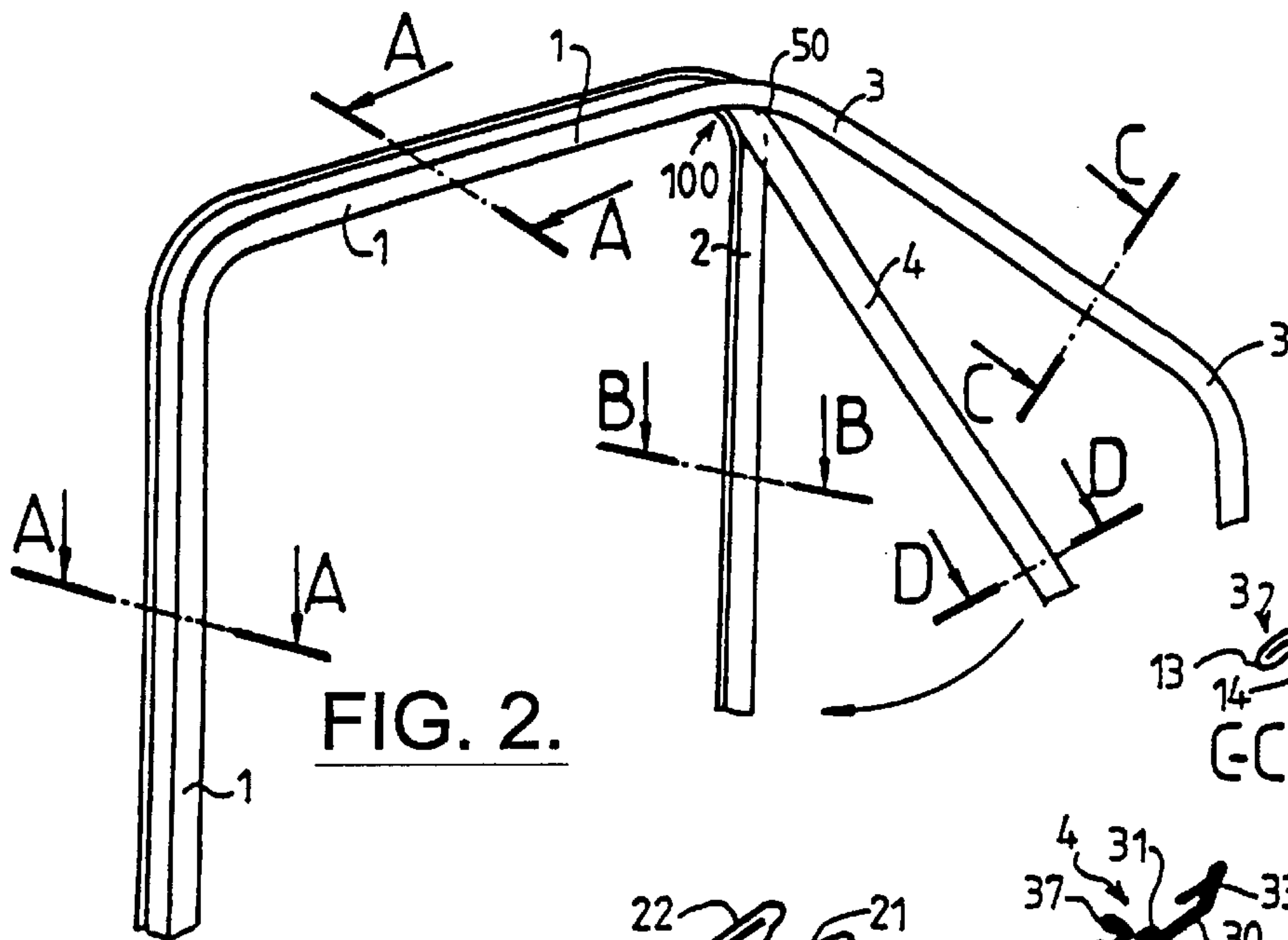


FIG. 2.

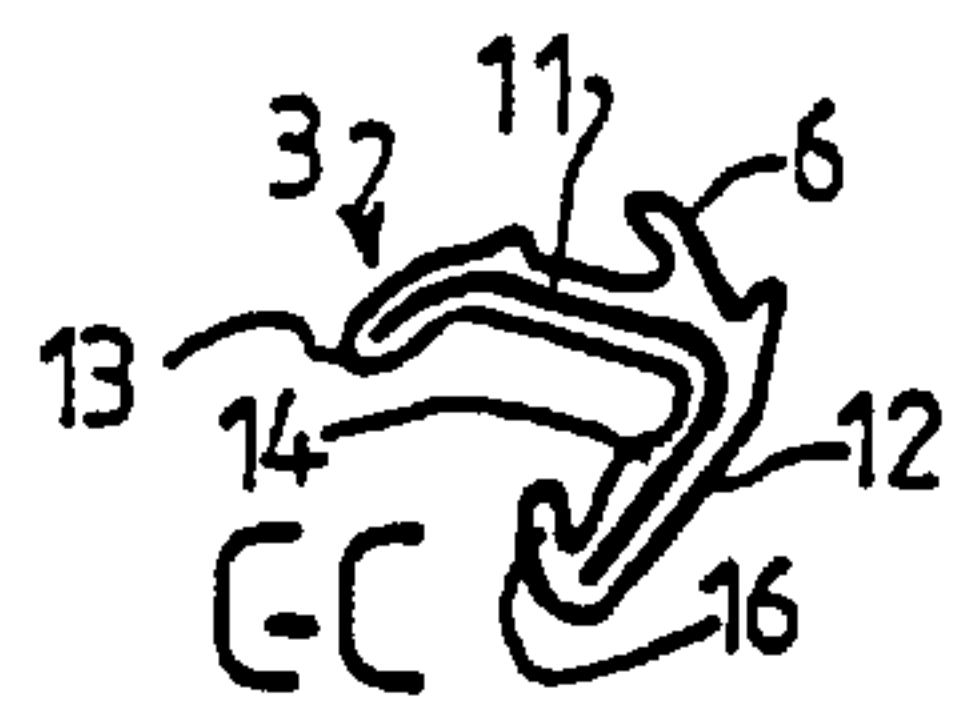


FIG. 2C.

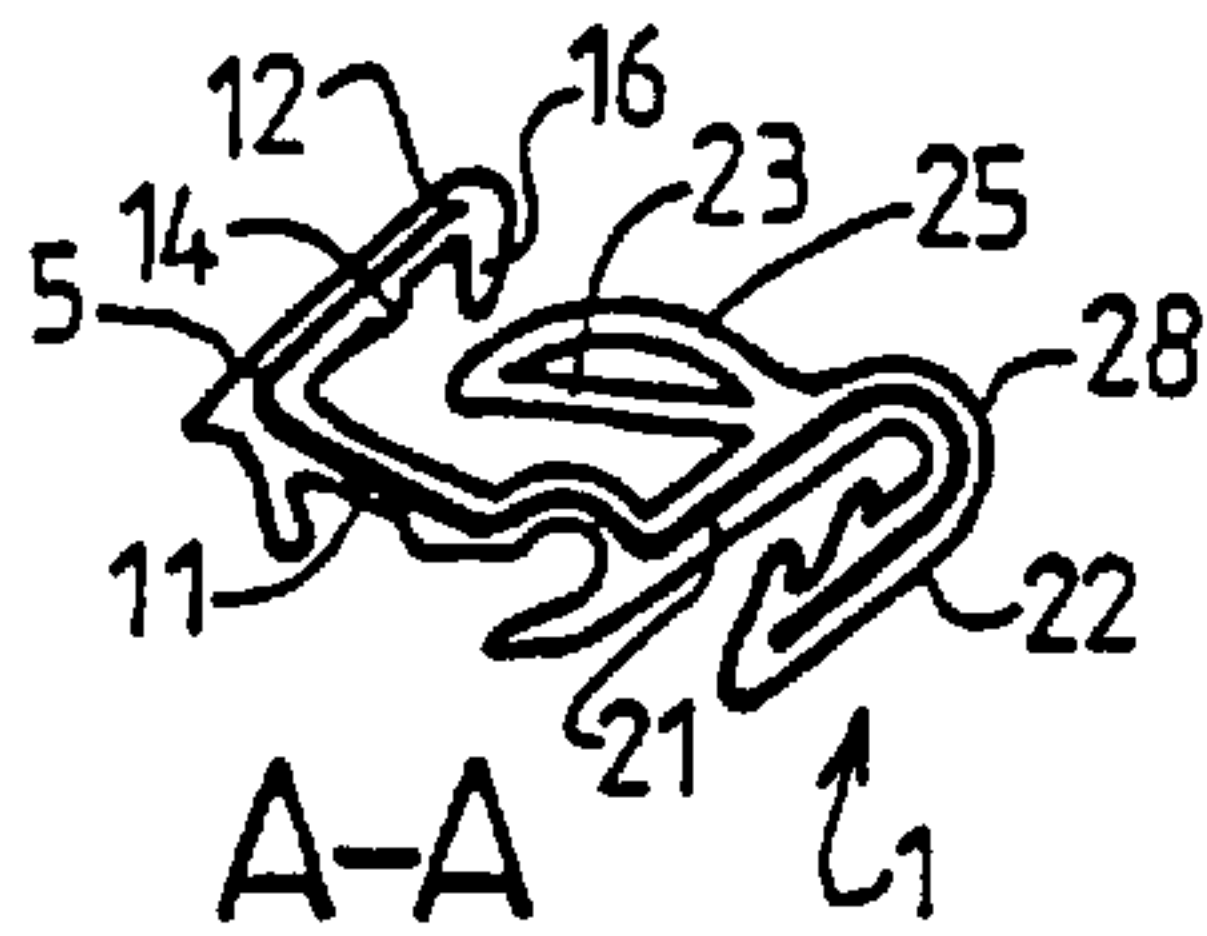


FIG. 2A.

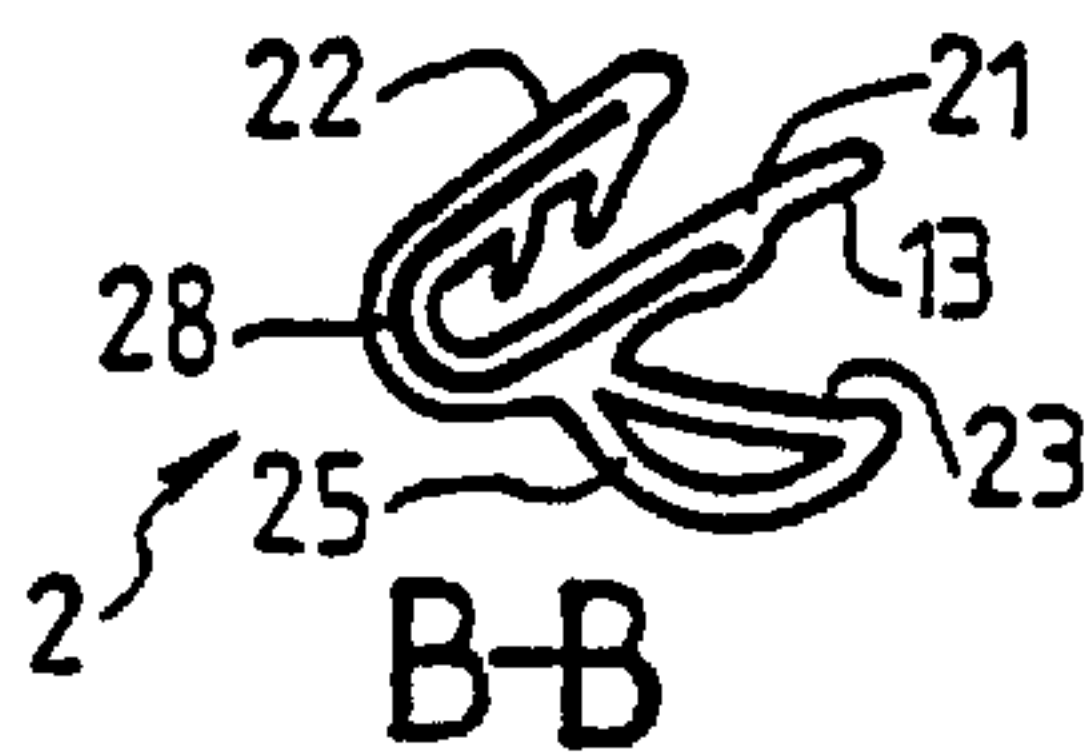


FIG. 2B.

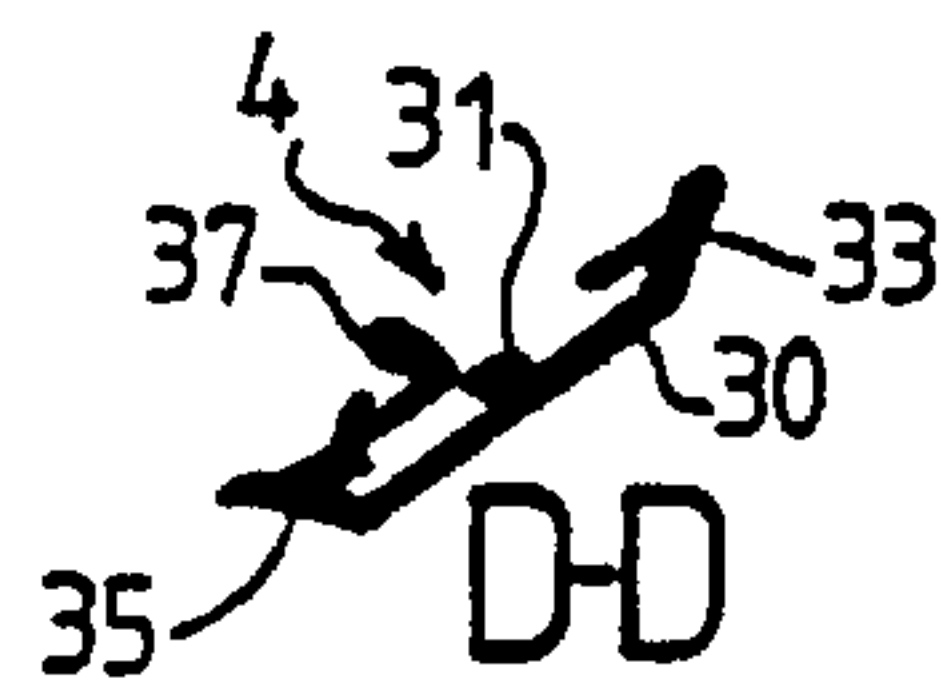


FIG. 2D.

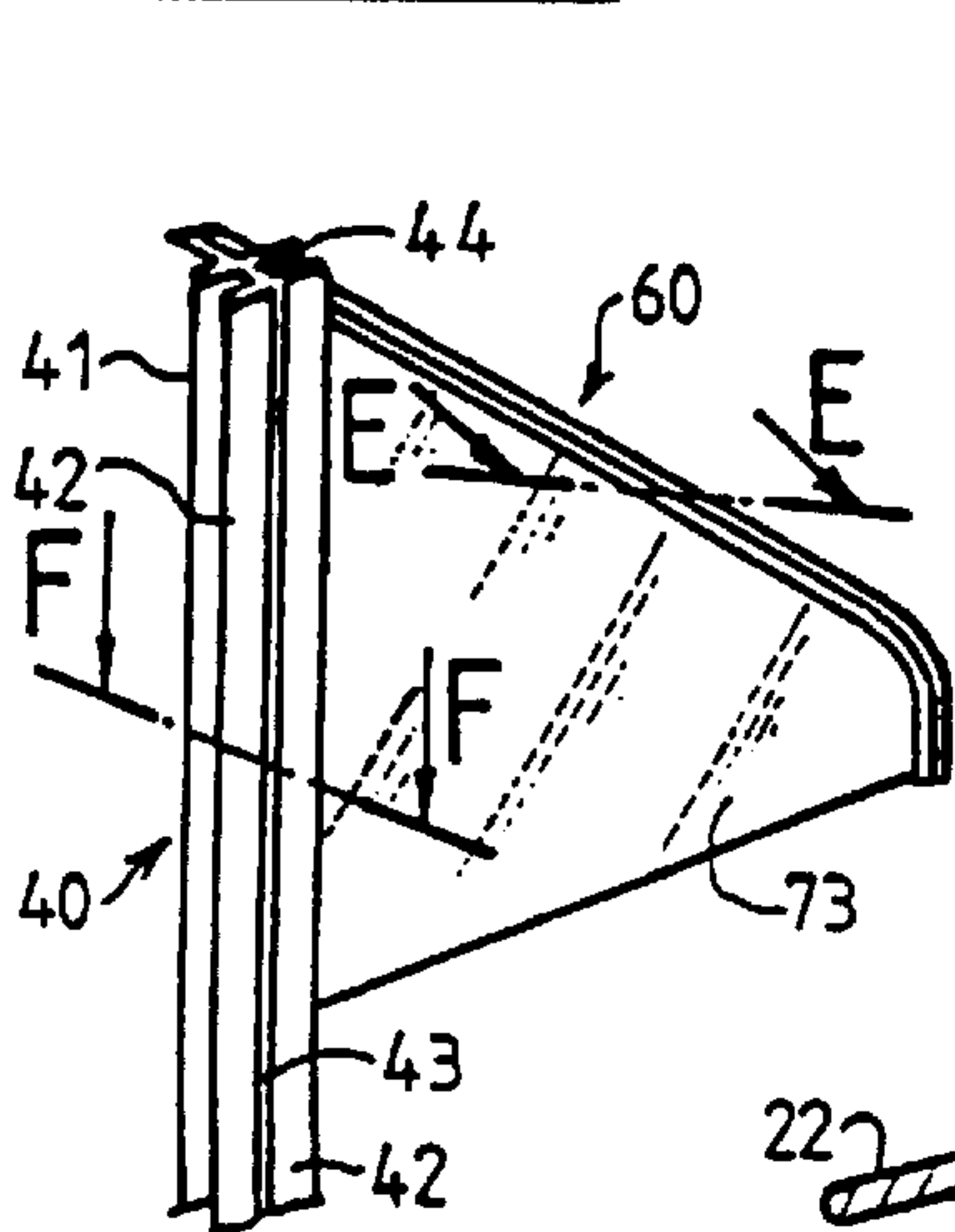


FIG. 4.

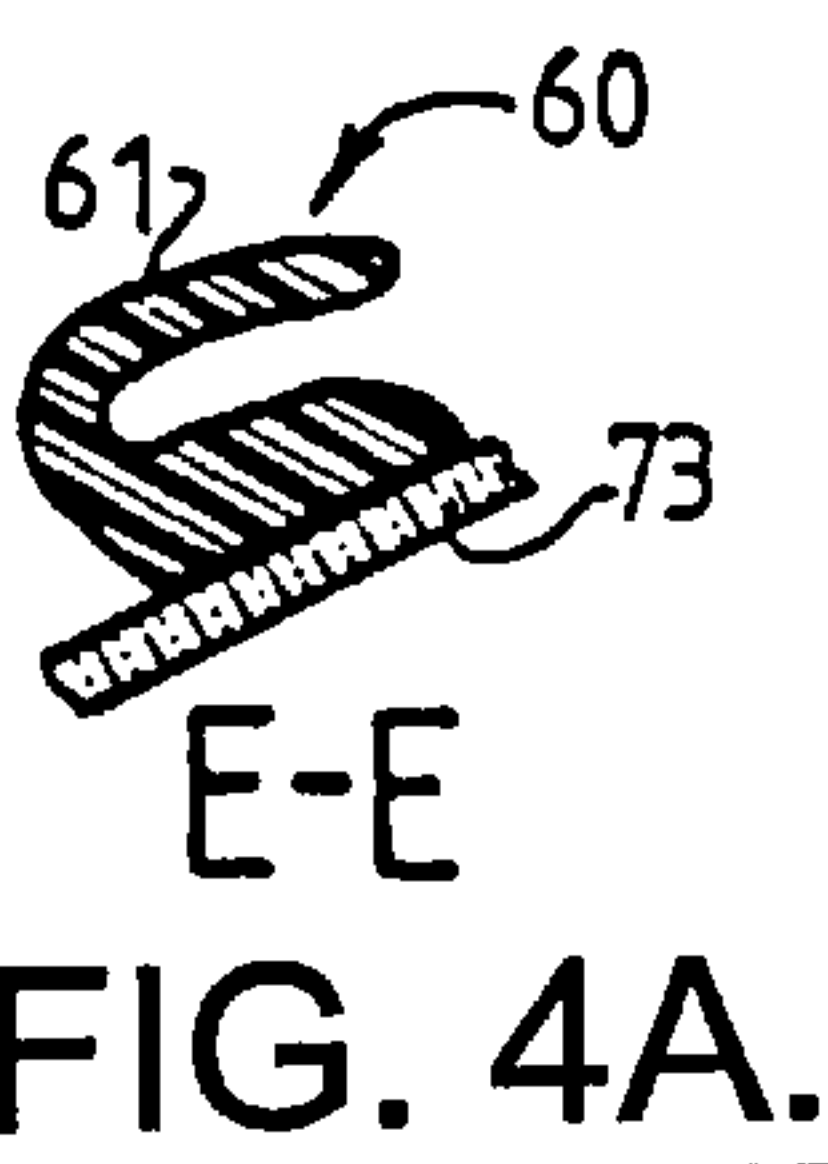


FIG. 4A.

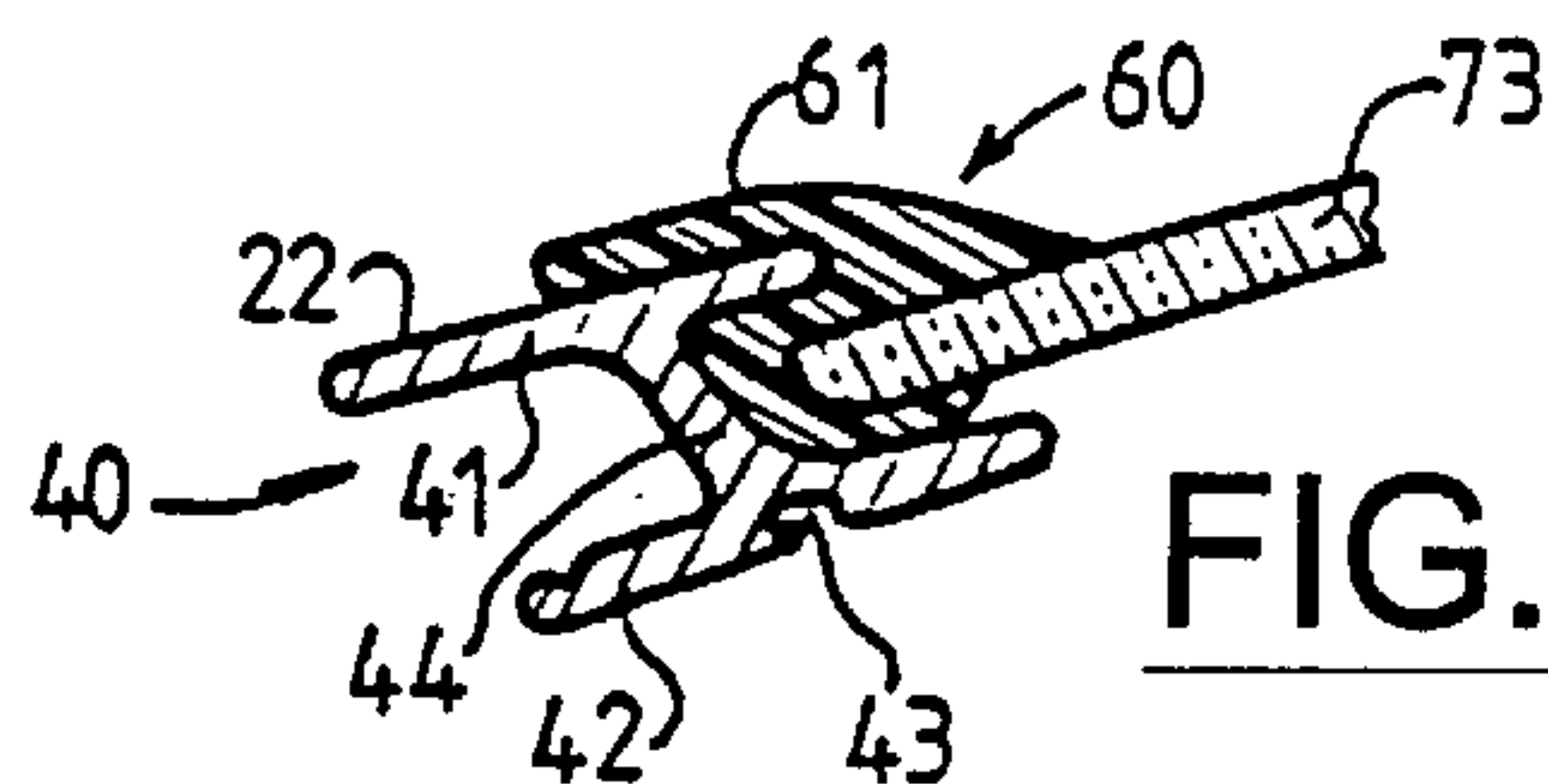


FIG. 4B.

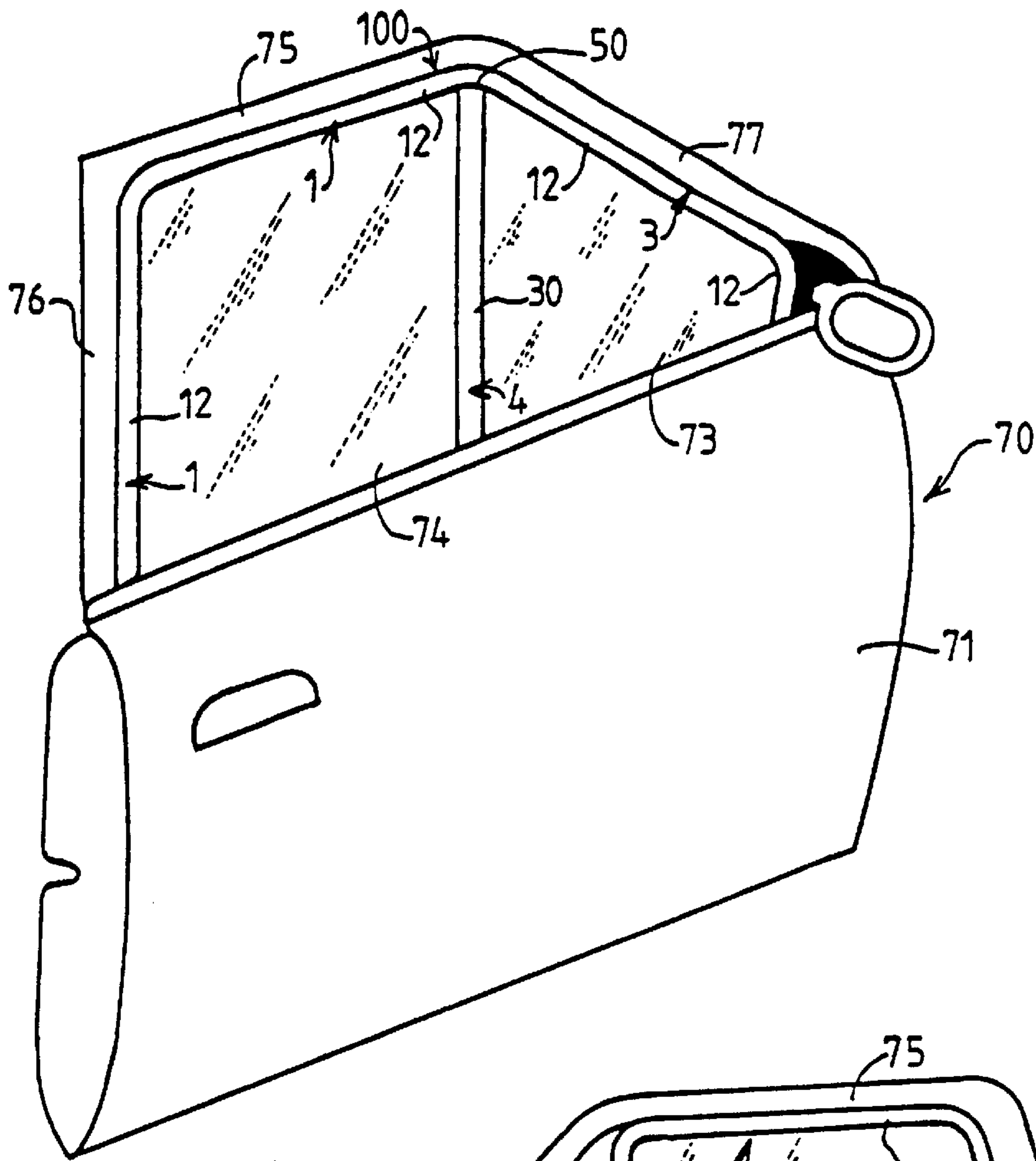


FIG. 5a.

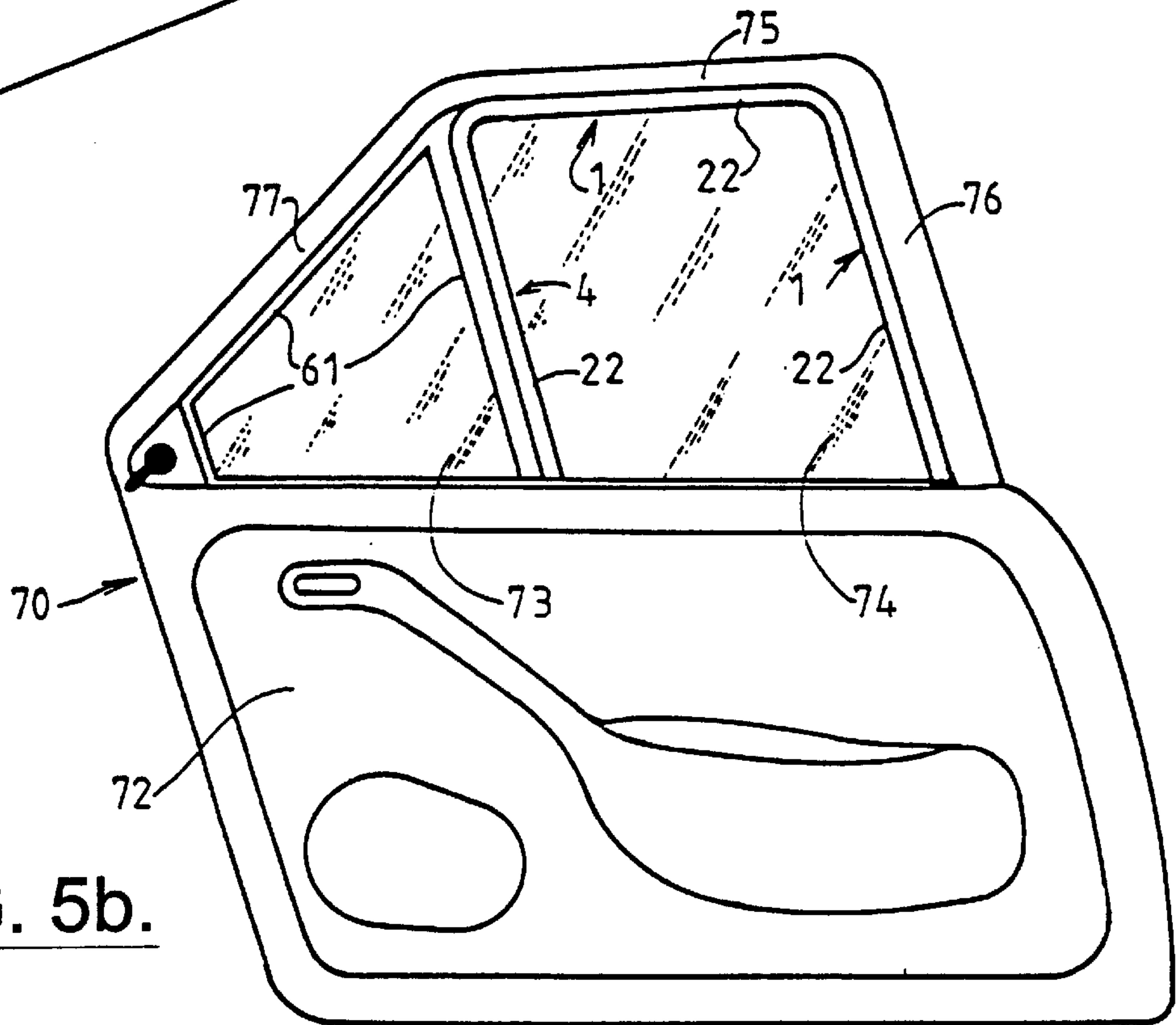


FIG. 5b.

**SLIDEWAY FOR A MOTOR VEHICLE DOOR
AND METHOD FOR FITTING IT
PARTICULARLY BY DIFFERENTIAL
BENDING**

The subject of the present invention is a slideway, particularly a reinforced slideway for a motor vehicle door, and the method for fitting it.

The invention relates, in particular, to slideways made of EPDM or TPE, preferably comprising a reinforcement, particularly to slideways which, for motor vehicle architecture or style reasons must seal both a moving drop glass, side by side with a fixed glass (generally triangular and known as a quarter light), the two glasses (mobile and fixed) being separated by a U- or H-shaped upright, known as a fixed glass upright or post.

When a moving glass needs to be associated with a fixed quarter light, it is very tricky both to provide esthetic continuity on the outside of the vehicle and acoustic continuity on the inside of the vehicle.

Specifically, there are two main scenarios encountered: in the first scenario, the slideway runs in parallel along the crimped doorframe (the case, for example, of the front door of the Renault Scenic automobile) and the joint at the top of the post is not very esthetic from outside the vehicle, because the strip which covers the post reaches the top practically edge to edge with the slideway, but what is more, acoustic sealing inside the vehicle in the upper region of the post is not easy to ensure, because of the discontinuity of the pressing lips.

in the second scenario, the slideway turns at the top of the post and runs down along it, and the fixed glass is then sealed by an independent rubber component which is either driven in or overmolded. This solution is acoustically acceptable, but is becoming ever less tolerated from the esthetic point of view.

The object of the present invention is to at least partially overcome the above drawbacks.

The basic idea underlying the invention is to achieve this by locally dissociating the acoustic and esthetic functions in order to allow the desired result to be obtained.

The invention thus relates to a method for fitting a slideway, particularly a reinforced slideway, to a door of a motor vehicle exhibiting a doorframe, as well as a fixed glass and a moving glass which are separated by a fixed post, said slideway exhibiting a region for mounting on a support such as a rebate and a sealing region comprising at least two opposed sealing lips, the mounting region and the sealing region exhibiting a common wall region which bears at least one said sealing lip, and the sealing region exhibiting an outer wall region forming outer covering of the slideway, characterized in that it involves:

longitudinally separating the slideway, over part of its length, into an outer portion which exhibits at least said outer wall region, and an inner portion which exhibits at least said mounting region and said sealing lip borne by said common wall, so that the slideway exhibits an unseparated region in which it consists of a main portion and, from a point of separation onward, a separated region in which the main portion is split along a longitudinal cutting line to form the inner portion and the outer portion;

mounting the main portion on the doorframe up to the point where the point of separation comes into line with the post;

mounting the outer portion and the inner portion on the doorframe beyond said point of separation and along the post, respectively.

This makes it possible both to obtain acoustic sealing inside the vehicle in the upper region of the post while at the same time eliminating the esthetic drawback of the independent rubber component, which is present in the second scenario mentioned hereinabove.

Furthermore, longitudinally separating the slideway into two half-slideways consisting of the outer portion and the inner portion, means that the neutral axes are dissociated, which makes them easier to bend. In particular, the method advantageously involves differential bending of the outer portion and of the inner portion.

The post may be covered with a cover strip.

Furthermore, this method also lends itself to eliminating the esthetic problem at the top of the post, by virtue of the cover strip being articulated to the outer wall region.

The cover strip may also exhibit at least one sealing lip which comes to lie opposite the at least one said sealing lip borne by the common wall.

The invention also relates to a slideway for a vehicle door, exhibiting a region for mounting on a support such as a rebate and a sealing region comprising at least two opposed sealing lips, the mounting region and the sealing region exhibiting a common wall region which bears at least one sealing lip, and the sealing region exhibiting an outer wall region forming outer covering of the slideway, characterized in that it exhibits an unseparated region in which it consists of a main portion and, from a point of separation onward, a longitudinally separated region in which the main portion is split along a longitudinal cutting line into an outer portion which exhibits at least said outer wall region, and an inner portion which exhibits said mounting region and said sealing lip borne by said common wall.

The slideway may have an outer cover strip, preferably articulated to the outer wall region.

To supplement the sealing on the mobile-glass side, the cover strip may exhibit at least one sealing lip which, when the cover strip is parallel to the inner portion, comes to lie opposite one said sealing lip borne by the common wall.

The cover strip may, in cross section, be shaped as a barbed hook, allowing it to be snap-fastened into a complementary groove in the post.

To facilitate cutting and possibly to reinforce the outer half-slideway after cutting, when the slideway is reinforced, the slideway advantageously has a shoulder located near to the longitudinal cutting line.

Other features and advantages of the invention will become more apparent from reading the description which will follow, given by way of nonlimiting example, in conjunction with the appended drawings, in which:

FIG. 1 depicts the profile of a slideway according to a preferred embodiment of the invention.

FIG. 2 illustrates the fitting of the portions of the slideway according to the invention.

FIGS. 2A, 2B, 2C and 2D are cross-sectional views of the slideway taken along the lines A—A, B—B, C—C and D—D of FIG. 2, respectively.

FIG. 3 is a perspective view with horizontal section illustrating the mounting on the post.

FIG. 4 illustrates the subassembly combining a fixed glass and a post.

and FIGS. 5a and 5b show the appearance of the assembly once mounted, respectively from the inside and from the outside of the vehicle.

The extruded slideway made of EPDM or TPE depicted in FIG. 1, exhibits a region **20** for mounting on a support such as a rebate forming part of a motor vehicle doorframe, and a sealing region **10**, both of which are generally U-shaped,

the two U-shaped members being arranged in opposite orientations with one branch **21** in common.

The slideway as depicted exhibits a reinforcement **5**, generally made of steel, stainless steel or aluminum, with a thickness of 0.8 mm for example and which, as depicted, affects the entire profile.

This reinforcement **5** could be arranged on just part of the profile, in this instance the region **20**, or alternatively could be completely absent.

The region **20** comprises two parallel branches **21** and **22** connected by a central branch **28**. Two flexible lips **24** and **26** are used in the conventional way to improve the anchorage of the slideway onto the rebate of the doorframe.

The region **10** comprises two parallel branches **14** and **21** which bear sealing lips **16** and **25** respectively, which face each other and are surface-coated with a material that has a low coefficient of friction, such as, for example, polyamide flock or crosslinked silicone lacquer, at **17** and **27**, to allow a moving glass to slide and to improve the acoustic sealing. The main lip **25** preferably has a membrane **23** intended to prevent it from giving or folding in the area where, as will be seen later, the slideway is to be subjected to bending. Also of note are the sealing lips **6** and **26** borne by the outer face of the central branch **11** which connects the parallel branches **12** and **21**, and the areas **11'** and **14'** on the inner face of the branches **11** and **14**, which are coated with co-extruded crosslinked polyethylene.

The branch **14** has an outer cover edge **12**, which is the externally visible face of the slideway once mounted on the vehicle.

To allow the cutting in the cutting zone **7**, and ensure that the region **10** maintains good rigidity (in the case of a reinforced slideway) after cutting, the central branch **11** has a region **9** forming a step of height *h* which extends toward the branch **21** in the form of a flat **8** in which said cutting zone **7** is located.

The slideway is cut longitudinally over part of its length in the cutting zone **7** to leave:

a portion **1** which consists of an uncut length of slideway (section AA of FIG. 2), which extends as far as the point **100** of separation, where it splits into:

a portion **2** (inner half-slideway) which consists of the region **20** as far as the cutting line **13** (section BB of FIG. 2),

a portion **3** (outer half-slideway) which consists of the region **10** as far as the cutting line **13'** (section CC of FIG. 2), therefore including any step **9** which may be present.

The portion **1** is mounted on the doorframe (vertical **76** and horizontal **75** regions in FIGS. 5a and 5b), while the portion **3** (outer half-slideway) also runs along the quarter light region **77** of the doorframe, in the extension of the region **75**.

The portion **2** (inner half-slideway) is bent and/or radiused through an angle of about 90° at the top of the post **40** (see FIG. 3) and drops down along this post. In the case of a reinforced slideway, the zone of the reinforcement **5** corresponding to the central branch **28** is preferably formed as a semicircle, as depicted.

As shown more particularly in FIGS. 3 and 4, the post **40** is in the form of an H-shaped section with two parallel main branches **41** and **42** connected by a bridge **44**.

The branch **42** is longitudinally grooved at **43** with a profile that complements that of a rib **31** in the shape of a small barbed hook which runs along a central region **32** of a cover strip **30** which is pressed against the branch **42**, this pressing being achieved by the interaction of the barbed hook **31** and of the rib **43**. This strip **30** provides the post **40** with its own covering on the outside of the vehicle.

The strip **30** has a lateral region **33** which snap-fastens in the direction of the quarter light glass **73**, by virtue of a rib **34** which returns into a corresponding groove in the branch **42**. On the opposite side, the strip **30** has another lateral region **34** which wraps around the other end of the branch **42** (see rib **39** and the corresponding groove in the interior face of the branch **42**). The lateral region **34** is extended by two flat regions **36** and **37** at 90° from one another which run along the interior edge of the branch **42** and part of the bridge **44**, until they come to face the lip **26** and the cutting line **13**.

Also of note is the lip **38** which comes to face the main lip **25** to act as the lip **16** and re-establish the sealing of the moving glass **74**.

The portion **2** is fitted as depicted around one of the ends of the main branch **41** in such a way that its branch **21** borders the inside of said end of the branch **41** and that the lip **26** bears against the bridge **44**. The opposite end of the branch **22** from the central branch **28** bears against an outer branch **61** of an overmolding **60** (generally known as an encapsulation) which traps the quarter light glass **73** between its branches **62** and **63**. The end of the branch **63** comes up close to the rib **34** of the cover strip **30**.

The two half-slideways (portion **2** and portion **3**) which, when reinforced, can be bent at different curvatures (differential bending) make it possible for different functions which, in theory appear contradictory, to be fulfilled.

The inner half-slideway (portion **2**) is bent/radiused at an angle of about 90° at the top of the post **40** and runs down along this post: there is therefore good acoustic sealing on the inside of the vehicle, because there is continuity of the main bearing lip **25**.

The outer half-slideway (portion **3**) runs along the crimped doorframe (**76**, **75**, **77**). This allows continuity of the doorframe covering by the covering edge **12** (see FIG. 5a).

The strip **30** which constitutes the portion **4**, is preferably molded at **50** to the outer half-slideway (portion **3**) on the outer cover face **12**, so as to improve the covering which is then achieved without discontinuity by the outer cover edge **12** and by the strip **30** (FIG. 5a).

On the inside, decorative covering is achieved by the esthetic and acoustic continuity of the branch **22** which internally covers the doorframe and the post around the periphery (**76**, **75**, **40**) of the moving glass.

It will also be noted that the separation into two half-slideways makes bending easier because the neutral axes of the two U-shaped members **10** and **20** are dissociated. Thus, it becomes possible to reduce the bend radius by comparison with the second scenario mentioned hereinabove.

The present invention is applicable to all scenarios of opening leaves, particularly for motor vehicles, in which there is a combination of a moving glass and a fixed glass.

The invention can be implemented in kit form, the kit comprising:

a slideway, advantageously pre-cut and pre-bent, as depicted in FIG. 2;

a quarter light comprising the post **40**, the fixed glass **73** and the encapsulation **60** of the post **40** and of the glass **73** (FIG. 4 and details EE and FF).

What is claimed is:

1. A method for fitting a slideway to a door of a motor vehicle having a doorframe, as well as fixed glass and a moving glass which are separated by a fixed post, said slideway including a mounting region for a mounting on a support and a sealing region comprising at least two opposed sealing lips, the mounting region and the sealing region

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having a common wall region which bears at least one said sealing lip, and the sealing region having an outer wall region forming an outer covering of the slideway, said method comprising:

separating the slideway longitudinally, over part of its length, into an outer portion which has at least said outer wall region, and an inner portion which has at least said mounting region and said sealing lip borne by said common wall, so that the slideway has an unseparated region in which it consists of a main portion and, from a point of separation onward, a separate region in which the main portion is split along a longitudinal cutting line to form the inner portion and the outer portion;

mounting the main portion on the doorframe up to the point where the point of separation comes into line with the post; and

mounting the outer portion and the inner portion on the doorframe beyond said point of separation and along the post, respectively.

2. The method as claimed in claim 1, wherein the slideway includes a reinforcement and wherein said method includes the step of differentially bending the outer portion and the inner portion.

3. Method according to either of claim 1, characterized in that the post is covered on the outside with a cover strip (4).

4. The method as claimed in claim 3, wherein said cover strip includes at least one sealing lip which is positioned opposite the at least one said sealing lip borne by the common wall of the inner portion.

5. Method according to claim 3, characterized in that said cover strip (4) is articulated (50) to said outer wall region (12).

6. A slideway for a vehicle door comprising an elongate body having a cross-sectional configuration defining a mounting region for mounting on a support and a sealing

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region comprising at least two opposed sealing lips, the mounting region and the sealing region including a common wall region which bears at least one sealing lip, and the sealing region including an outer wall region forming an outer covering of the slideway, and said elongate body having, along its longitudinal extent, an unseparated region, a point of separation, and, from the point of separation onward along the longitudinal extent, a longitudinally separated region in which the elongate body is split longitudinally into an outer portion which includes at least said outer wall region, and an inner portion which includes said mounting region and said sealing lip borne by said common wall.

7. The slideway as claimed in claim 6, which includes an outer cover strip articulated to the outer wall region.

8. The slideway as claimed in claim 7, wherein said cover strip has at least one sealing lip which, when the cover strip is parallel to the inner portion, is positioned opposite one said sealing lip borne by the common wall.

9. The slideway as claimed in claim 7, wherein the cover strip in cross section is shaped as a barbed hook, allowing it to be snap-fastened into a corresponding complementary groove in a post.

10. Slideway according to one of claims 6, characterized in that it comprises a reinforcement (5).

11. Slideway according to one of claims 6, characterized in that in cross section it has a shoulder (9) located near to the longitudinal cutting line (13, 13').

12. The slideway as claimed in claim 6, wherein said slideway is pre-bent to facilitate mounting.

13. An assembly for mounting a slideway on a motor vehicle door, which comprises a slideway as claimed in claim 6 and a quarter light comprising a post, a fixed glass and an encapsulation of the post and of the fixed glass.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,250,017 B1
DATED : June 26, 2001
INVENTOR(S) : Tessier

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 2,

After line 60, insert, -- FIGS. 4A and 4B are cross-sectional views taken along the lines E-E and F-F of FIG. 4, respectively. --.

Signed and Sealed this

Eleventh Day of December, 2001

Attest:

Nicholas P. Godici

Attesting Officer

NICHOLAS P. GODICI
Acting Director of the United States Patent and Trademark Office